

## ABSTRACT

This invention is related a biosensor for bone mineral density measurement, comprising a stimulating source; a transducer having antibodies against TRAP 5a, TRAP 5b or total TRAP (i.e. TRAP 5a + TRAP 5b) immobilized thereon; a signal detecting unit; and a signal processing unit; wherein the TRAP refers to tartrate-resistant acid  
5 phosphatase (TRAP). The method for bone mineral density measurement disclosed in this invention is detecting the concentration or activity of TRAP, TRAP 5a and TRAP 5b in blood by using the biosensor described above. Accordingly, the method can monitor changes of the bone mineral density to prevent osteoporosis.